REMARKS

Applicant respectfully requests reconsideration of the claims of this application in light of the amendments and remarks presented herein. Claims 1-28 are pending.

Claims 1 and 14, the only independent claims, have been amended to clarify that the present invention is a **one-stage process** which takes green coffee beans and treats them in a **single unit operation** to provide dried, roasted and ground coffee beans without other process steps or processing equipment. Thus, the drying, roasting, and grinding take place simultaneously. Support for this amendment can be found throughout the specification; see, e.g., page1, lines 9-10; page 2, lines 19-25; page 3, line 23, through page 4, line 8.

THE INVENTION

In assessing the present invention and claims, it is important to understand what the Applicants consider to be their invention. Applicants have not invented, and are not intending to claim, vortex grinding apparatus or machines or general methods of using such systems. Such vortex grinding equipment have been known for a considerable time and have been used to grind various materials. Indeed, in the specification Applicants point to a particularly preferred vortex grinding machine (U.S. Patent Publication 2002/0027173; see, e.g., page 6, lines 11-12, page 8, lines 19-26, and the Examples in the present specification) for use in the present invention. Publication 2002/0027173 lists a wide variety of materials that may be suitable for use in this vortex grinding system. Thus, for example, animal or agricultural products, industrial, consumer, or animal waste materials, fuels, and medical products can be dried and reduced in particle size in such processes.

Conventionally, coffee is prepared on an commercial scale using a multi-step process. Often such processes are more art than science with individual coffee manufacturers having complicated, detailed, and separate drying, roasting, and grinding steps to produce their desired coffee product. Thus, as explained in the specification,

> "green coffee beans are roasted before consumption to develop the characteristic and desired flavor and aroma of the coffee product. When roasted,

chemical reactions occur within the coffee beans that transform the beans into the desired state of pyrolysis. The roasted coffee beans acquire a darker hue as volatile coffee oil is released during the roasting process. Roasting is a sensitive process requiring skill in generating the coffee flavors without adversely affecting the balance of taste. Uniform heating of the coffee beans is important in this respect, so that the coffee beans experience essentially the same heat history during roasting. In previous efforts to provide more uniform heating of the coffee beans during roasting, coffee beans have been roasted in large revolving drums, or in fluidized beds and the like, such that the beans are heated while suspended in air.

"After roasting and at some point before consumption, the coffee beans are ground into smaller particles of generally uniform size to facilitate extraction of flavor components from the coffee product during brewing. Some roasted coffee beans are sold intact after roasting, and they are ground by consumers themselves before brewing. However, there is a large market and need for preground roasted coffee beans. Coffee bean processors grind roasted coffee beans and pack the ground product in airtight pouches or cans into which inert gas is commonly injected to displace oxygen before sealing the package, so that flavor loss in the ground coffee beans from oxidation is minimized. The preground coffee products offer the consumer added convenience as they eliminate the need to grind the coffee beans or need for equipment for that purpose. Roasted coffee beans also are ground by coffee bean processors for use in the manufacture of some instant coffee products. In making such instant coffee products, roasted coffee beans are ground and then brewed in relatively large production quantities, and the brewed product is either freeze-dried or spray-dried to shelf-stable moistures in granular or powder form. Consequently, commercial processes are used and needed by coffee bean processors for both roasting and grinding green coffee beans in one unit operation. Moreover, the coffee bean processing business is competitive, so economic factors such as capital costs, operation costs and production yields are important." Specification at page 1, line 21, through page 2, line 15.

Thus, an arrangement for making **roasted ground coffee** in fewer process steps and with less equipment requirements would be beneficial and desirable. The present invention is related to such a **single-stage** process for producing dried, roasted and ground coffee beans from green coffee beans. Importantly in the present invention, the green coffee beans are simultaneously dried, roasted, and ground in a single step to produce commercially satisfactory coffee products. This allows a significant improvement in the production of coffee as compared to the conventional commercial

coffee preparation process which includes separate roasting and grinding steps. As noted in the specification, the present invention offers numerous advantages:

> "The single-stage process for drying, roasting, and grinding of green coffee beans in a continuous manner in a single unit operation according to embodiments of this invention offers numerous advantages over conventional schemes for roasting and grinding coffee beans. For one, there is the elimination of the need for conducting separate drying, roasting, and grinding processes in different equipment such as conventionally used in processing wet green coffee beans. Additionally, the process of this invention can be operated in a continuous mode as the compressed heated air is continually exhausted from the system after entraining the coffee beans downward through the enclosure to its lower end where they are deposited, and roasted and ground coffee bean product material can be withdrawn from the lower end of the enclosure in an air-tight manner, such as by using a rotary air-lock. These advantages reduce process complexity, production time, and production costs. Also, product quality enhancements are attained. The drying, roasting and grinding of the wet coffee beans in the same equipment can enhance flavor and aroma generation as compared to roasting and grinding them in separate processes performed in separate equipment. In a further embodiment, a higher yield and more uniform product color development is made possible as part of grinding inside the roasting enclosure by controlling particle size distribution via screening or other classification procedure performed on the product stream and recycling coarser fraction coffee beans needing more grinding." Specification, page 3, line 22, through page 4, line 8.

Importantly, the present invention provides a commercially acceptable coffee product which is dried, roasted, and ground in a single step. This is in comparison to the conventional, highly individualized, commercial process in which multiple steps are used to produce the desired product.

Would one of ordinary skill in the art expect that coffee could be **dried and ground** in a vortex grinding apparatus such as described in U.S. Patent Publication 2002/0027173? Of course. Applicants do not doubt that almost any material could be dried and reduced to some form of a powder in such vortex grinding systems. That is not, in the case of coffee beans, the point. Roasting coffee is similar to Goldilocks and the Three Bears – too much will burn the coffee and produce unacceptable flavors, too little will not result in sufficient roasting and will not provide the desired balanced coffee flavors and aromas – the roasting needs to be "just right" to produce the desired coffee

flavors and aromas and they must remain within the coffee product. One of ordinary skill in the art would not reasonably expect based on the knowledge in the art that the use of vortex grinding with green coffee beans would provide a dried powder that is at the same time roasted such that it is comparable with green coffee beans roasted and ground using conventional methods. One of ordinary skill in the art, even assuming that he or she considered using such a grinding system, might expect that desired flavors and aromas, even if produced, would be lost in the air stream and thus not remain in the desired product. Indeed, the present invention is **unexpected and surprising** in light of conventional teachings in the art of roasting and grinding coffee beans.

REJECTION UNDER 35 U.S.C. §112

Claims 12 and 26 have been rejected under 25 U.S.C. §112 as being indefinite. Specifically, the Examiner believes that the limitation "substantially air-tight manner" is indefinite.

Although the Applicants disagree with this rejection and in order to advance prosecution, claims 12 and 26 have been amended to simply remove the limitation "substantially air-tight manner" from the claims and specific that the rotary valve is of the air-lock type. Support can be found on page 3, lines 27-32; page 5, lines 17-23. Applicants respectfully request that this rejection be withdrawn.

In view of the above, Applicant respectfully submit that pending claims 1-13 and 18-21 are in condition for allowance. Therefore, Applicant respectfully requests that this case be passed to issuance.

REJECTIONS UNDER 35 U.S.C. §103

The Examiner has presented a number of related rejections under 35 U.S.C. §103. These include:

Rejection 1 – Claims 1, 5-10, 13-14, 18-23, 25, and 27-28 have been rejected under 35 U.S.C. §103 in view of Polifka, U.S. Patent Publication 2002/0027173 (discussed in detail above);

Rejection 2 – Claims 1, 5-10, 13-14, 18-23, 25, and 27-28 have been rejected under 35 U.S.C. §103 in view of Polifka, U.S. Patent Publication 2002/0027173

(discussed in detail above) and further in view of Enomoto (U.S. Patent 5,307,733) and Tidland et al. (U.S. Patent 5,958,494);

Rejection 3 – Claims 2 and 15 have been rejected under 35 U.S.C. §103 in view of Polifka, U.S. Patent Publication 2002/0027173 (discussed in detail above), Enomoto (U.S. Patent 5,307,733), Tidland et al. (U.S. Patent 5,958,494), and further in view of Pultinas, Jr. (U.S. Patent 4,591,508);

Rejection 4 – Claims 3, 4, 11, 16, 17, and 24 have been rejected under 35 U.S.C. §103 in view of Polifka, U.S. Patent Publication 2002/0027173 (discussed in detail above), Enomoto (U.S. Patent 5,307,733), Tidland et al. (U.S. Patent 5,958,494), and further in view of Reeves et al. (U.S. Patent 3,821,430);

Rejection 5 – Claims 2-4, 11, 12, 15-17, 24, and 26 have been rejected under 35 U.S.C. §103 in view of Polifka, U.S. Patent Publication 2002/0027173 (discussed in detail above), Enomoto (U.S. Patent 5,307,733), Tidland et al. (U.S. Patent 5,958,494), and further in view of Ruiz-Avial (WO 00/01256); and

Rejection 6 – Claims 12 and 26 have been rejected under 35 U.S.C. §103 in view of Polifka, U.S. Patent Publication 2002/0027173 (discussed in detail above), Enomoto (U.S. Patent 5,307,733), Tidland et al. (U.S. Patent 5,958,494), Reeves et al. (U.S. Patent 3,821,430) and further in view of Eichner (U.S. Patent Publication 2004/142078).

These rejections are closely related. Each rejection relies upon Polifka as its primary reference; rejections 2-6 rely upon Polifka as the primary reference with Enomoto and Tidland as secondary references and, in some cases, along with various tertiary references. Each of these rejections will be discussed in turn.

Rejection 1. Claims 1, 5-10, 13-14, 18-23, 25, and 27-28 have been rejected under 35 U.S.C. §103 in view of Polifka. As indicated by the Examiner, Polifka does in fact provide a vortex grinding system which is taught to be useful for drying and grinding a large variety of materials. Indeed, as pointed out above, the Polifka vortex grinding systems is the preferred vortex grinding system of the present invention.

The Examiner admits that Polifka does not disclose the use of green coffee beans in his vortex grinding system. The Examiner goes on to conclude that because Polifka

> "disclose . . . comminuting, heating and drying edible foodstuffs . . . it would have been expected for the device to dry, roast and grind coffee as claimed since the device disclosed by Polifka is capable of conducting such operation. As Polifka teaches that agricultural product can be processed through the device, coffee beans, falling within such a category would have been successfully processed as claimed."

Applicants respectfully disagree with this rejection. There is no teaching or suggestion that green coffee beans could be treated in a vortex grinding system **to produce a dried, roasted, and ground coffee in a single step**. As discussed above, coffee beans when roasted undergo chemical reactions within the coffee beans that transform the beans into the desired state of pyrolysis. The roasted coffee beans acquire a darker hue as volatile coffee oil is released during the roasting process. Roasting is a sensitive process requiring skill in generating the coffee flavors without adversely affecting the balance of taste. As noted above, roasting coffee is similar to Goldilocks and the Three Bears – too much will burn the coffee and produce unacceptable flavors, too little will not result in sufficient roasting and will not provide the desired balanced coffee flavors and aromas – the roasting needs to be "just right" to produce the desired coffee flavors and aromas and they must remain within the coffee product. One of ordinary skill in the art would not reasonably expect based on the knowledge in the art that the use of vortex grinding with green coffee beans would provide a dried powder that is at the same time roasted such that it is comparable with green coffee beans roasted and ground using conventional methods. One of ordinary skill in the art, even assuming that he or she considered using such a grinding system, might expect that desired flavors and aromas, even if produced, would be lost in the air stream and thus not remain in the desired product. Indeed, the present invention is **unexpected and surprising** in light of conventional teachings in the art of roasting and grinding coffee beans.

The Examiner concluded that "it would have been expected for the device of Polifka to dry, roast and grind coffee as claimed since the device disclosed by Polifka is **capable of conducing such operation**" (emphasis added). Applicants respectfully suggest that this argument is both circular and involves hindsight reconstruction of the invention. The Examiner has effectively concluded that since someone (i.e., the

Applicants) have shown that the device of Polifka is capable of doing something, that it would be obvious to one of ordinary skill in the art to do so. The Examiner is effectively arguing that because it does work (as shown by the Applicants), it is obvious. That is not the appropriate standard under 35 U.S.C. §112. Moreover, only Applicants have shown that the use of vortex grinding with green coffee beans would provide a dried powder that is at the same time roasted such that it is comparable with green coffee beans roasted and ground using conventional methods. This is impressible use of hindsight.

Applicants respectfully request that this rejection be withdrawn.

Rejection 2. Claims 1, 5-10, 13-14, 18-23, 25, and 27-28 have been rejected under 35 U.S.C. §103 in view of Polifka and further in view of Enomoto and Tidland et al. The Examiner applied Polifka in the same manner as in Rejection 1. The Examiner relied upon Enomoto to teach a "coffee maker that roasts and grinds coffee beans without the use of separate appliances . . . for the purpose of shortening the length of time required for using freshly ground coffee beans . . ." (citations omitted). The Examiner relied upon Tidland et al. to provide "a coffee bean roasting apparatus that incorporates a cyclonic air flow (Figure 6) to roast said coffee beans and then exhausting said air through a flue . . . for the purpose of providing a low pollutant and energy efficient roasting system that produces more consistent coffee bean roasts . . ." (citations omitted). The Examiner then concluded that it would have been obvious

> "to roast, grind and dry coffee beans as taught by Enomoto and Tidland for the purpose of providing a shorter length of time to make freshly ground coffee beans and to provide a low pollutant and energy efficient roasting system that produces more consistent coffee bean roasts. Such a modification will save the user time and money since a two or three step process can be performed through the purchase of one machine."

Applicants respectfully disagree with this rejection. The primary reference Polifka has been discussed above in detail and that discussion is hereby incorporated by reference. Neither of the two secondary references correct the deficiencies of the primary reference detailed above.

Enomoto teaches a coffee maker having the ability to perform "all of the steps form the roasting of raw coffee beans to the grinding of the beans to the brewing of the coffee completely automatically." The Examiner is correct that the Enomoto device "roasts and grinds coffee beans without the use of separate appliances"; that, however, does **not** mean that the Enomoto device provides **single stage operation** as that term is used in the present application. Indeed, Enomoto provides a conventional roasting unit 10 in which the coffee beans are roasted. Afterwards, the roasted coffee beans are moved to a holding and cooling chamber 22. After cooling, the roasted and cooled coffee beans are ground in a conventional grinder 30. The ground coffee is then transferred to a conventional brewer device 2 through which hot water is introduced to brew the final coffee beverage. Enomoto is simply a combination of conventional and separate roasting, cooling, grinding, and brewing steps arranged in a single coffee maker. The coffee beans are not roasted, dried, and ground simultaneously in a single step as required by the present claims.

Tidland et al. provides a roasting system having a roasting chamber using heated and reconditioned air to effect roasting. According to the Examiner, Tidland et al. provides "a coffee bean roasting apparatus that incorporates a cyclonic air flow (Figure 6) to roast said coffee beans." Applicants respectfully disagree. The coffee beans in Tidland et al. are roasted in a conventional fluid bed system 36. The so-called "cyclonic air flow" referred to in Figure 6 only relates to the chaff cyclone 60 wherein "reduced air pressure allows the chaff to fall down into funnel 62 [which] directs the chaff into the bucket 64." Col. 5, lines 35-40. Moreover and importantly, there is no grinding of the coffee beans at all in this system, much less in the roasting system. The coffee beans are not roasted, dried, and ground simultaneously in a single step as required by the present claims.

It is not clear what type of system would be provided by a system devised by combining these three references. Clearly, however, it is not the system described and claimed in the present application. Applicants respectfully request that this rejection be withdrawn.

Rejection 3. Claims 2 and 15 have been rejected under 35 U.S.C. §103 in view of Polifka, Enomoto, and Tidland et al. and further in view of Pultinas, Jr. The Examiner applied Polifka, Enomoto, and Tidland et al. in the same manner as in Rejection 2. Pultinas Jr. is relied upon to teach "a process for roasting and grinding green coffee beans . . . wherein said processed coffee beans contain [a] moisture content of between 3 and 6 percent" (citations omitted).

Applicants respectfully disagree with this rejection. The primary reference Polifka and secondary references have been discussed above in detail and that discussion is hereby incorporated by reference. Pultinas Jr. does not correct the deficiencies of the primary and secondary references detailed above.

Pultinas Jr. does, as indicated by the Examiner, teach a moisture content of the processed coffee of between 3 and 6 percent. The Pultinas Jr. process is, however, described as follows:

> "In the present process, green coffee beans are roasted, preferably within 1 to 5 minutes, cooled to below about 65°F. (18°C.), held at a temperature below about 65°F. (18°C.) as they enter the grinder and then coarsely ground. The ground beans are maintained at a temperature below about 80°F. (27°C.) as they are fed into a roll mill and milled within a range of carefully defined coffee feed rates, roll mill pressures, and roll peripheral surface speeds." Col. 3, lines 47-57.

It is clear that the coffee beans in Pultinas Jr. are roasted and ground in separate steps. Indeed, the grinding itself takes place in a two stage process. In the first stage, the roasted coffee beans are subjected to a coarse grind followed by a second stage wherein the coarse grind is further ground to the desired extent in a roll mill using a range of carefully defined coffee feed rates, roll mill pressures, and roll peripheral surface speeds." The coffee beans are not roasted, dried, and ground simultaneously in a single step as required by the present claims.

Clearly Pultinas Jr. does not correct the deficiencies noted in the primary and secondary references. Applicants respectfully request that this rejection be withdrawn.

Rejection 4. Claims 3, 4, 11, 16, 17, and 24 have been rejected under 35 U.S.C. §103 in view of Polifka, Enomoto, Tidland et al. and further in view of Reeves et

al. The Examiner applied Polifka, Enomoto, and Tidland et al. in the same manner as in Rejection 2. Reeves et al. is relied upon with regard to teaching the importance of a particular particle size range.

Applicants respectfully disagree with this rejection. The primary reference Polifka and secondary references have been discussed above in detail and that discussion is hereby incorporated by reference. Reeves et al. does not correct the deficiencies of the primary and secondary references detailed above.

Reeves et al. provides an instant coffee blend composed of two dissimilarly surface dried coarse granular extracts. The first extract is a quality freeze dried component and the second extract is preferably a lower quality lightly roasted Robusta coffee containing irregularly surfaced agglomerates derived by spray drying and fusion agglomeration. Abstract. There is no teaching or suggestion that coffee beans could be roasted, dried, and ground simultaneously in a single step as required by the present claims.

Clearly Reeves et al. does not correct the deficiencies noted in the primary and secondary references. Applicants respectfully request that this rejection be withdrawn.

Rejection 5. Claims 2-4, 11, 12, 15-17, 24, and 26 have been rejected under 35 U.S.C. §103 in view of Polifka, Enomoto, Tidland et al. and further in view of Ruiz-Avial. The Examiner applied Polifka, Enomoto, and Tidland et al. in the same manner as in Rejection 2. Ruiz-Avial is relied to teach "a method of comminuting . . . and drying plant material using heated air . . . that passes into a conical chamber . . . further comprising an exhaust pipe . . . and a rotary valve . . . for discharging said material" as well as "means for selectively recycling . . . the process material of insufficient particle size" (citations omitted).

Applicants respectfully disagree with this rejection. The primary reference Polifka and secondary references have been discussed above in detail and that discussion is hereby incorporated by reference. Ruiz-Avial does not correct the deficiencies of the primary and secondary references detailed above.

As shown in Figure 2, Ruiz-Avial provides a low temperature dryer using a cold aerosolizer 34 for drying plant material with air. A cyclone 38 is used to separate air

and aerosol from the partially dried plant material. A rotary valve 39 is used at the bottom of the cyclone to remove the partially dried plant material to another drying tower 42 and then to a second cyclone 46 wherein air and the dried plant material are separated. The dried plant material is then removed through rotary valve 47. There is no teaching or suggestion that plant materials such as coffee beans could be roasted, dried, and ground simultaneously in a single step as required by the present claims.

Clearly Ruiz-Avial does not correct the deficiencies noted in the primary and secondary references. Applicants respectfully request that this rejection be withdrawn.

Rejection 6. Claims 12 and 26 have been rejected under 35 U.S.C. §103 in view of Polifka, Enomoto, Tidland et al., Reeves et al. and further in view of Eichner. The Examiner applied Polifka, Enomoto, and Tidland et al. in the same manner as in Rejection 2. Eichner is relied to teach certain components of use in a coffee roasting process (e.g., valve to allow discharge of roasted coffee; use of apertures to release coffee beans; transfer valve with pressure release value to discharge coffee beans).

Applicants respectfully disagree. The primary reference Polifka and secondary references have been discussed above in detail and that discussion is hereby incorporated by reference. Eichner does not correct the deficiencies of the primary and secondary references detailed above.

Eichner is directed to a pressurized roaster for coffee beans. There is no teaching or suggestion that coffee beans could be roasted, dried, and ground simultaneously in a single step as required by the present claims.

Clearly Ruiz-Avial does not correct the deficiencies noted in the primary and secondary references. Applicants respectfully request that this rejection be withdrawn.

CONCLUSION

In view of the foregoing, Applicants submit that claims 1-28 are patentable over the cited references and hereby respectfully request reconsideration and allowance of claims 1-28.

The Commissioner is hereby authorized to charge any additional fees which may be required in the Application to Deposit Account No. 06-1135.

Respectfully submitted,

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